

REMARKS

Claims 1 and 3-48 were examined by the Office, and in the Office Action of 15 February 2008 all claims are rejected. With this response claims 26 and 39 are amended. All amendments are fully supported by the specification as originally filed.

Applicant respectfully requests reconsideration and withdrawal of the rejections in view of the following discussion.

Claim Rejections Under § 101

In section 2, on page 2 of the Office Action, claims 26 and 39 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 26 and 39 are amended to be directed to a computer readable storage medium embedded with a computer program. Accordingly, applicant respectfully submits that claims 26 and 39 as amended are statutory.

Claim Rejections Under § 112

In section 4, on page 2 of the Office Action, claims 1 and 3-48 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite. The Office asserts that the claim recitation pertaining to obtaining/segmenting audio signals based upon audio characteristics are vague and indefinite because it is not clear as to which segmenting aspect of the applicant's disclosure this refers to. The Office asserts that the disclosure presents two segmenting sections.

Applicant respectfully disagrees with the Office's assertion that the disclosure presents two segmenting sections. The Office asserts that subblock 12 generates segmented audio with associated parameters. However, this assertion is incorrect. As stated on page 13, line 11 the parameter extraction unit 12 provides unquantized parameters, and does not provide segments as asserted by the Office. Instead, it is the compression module 20 that performs the segmentation. See page 13, lines 22-24. Furthermore, page 15, lines 10-12 state that steps 510 and 512 can be carried out using a typical speech encoder. Step 510 is reading in of a segment of a speech signal, and step 512 is estimating speech parameters at regular intervals. Therefore, these steps do not correspond to segmentation. Accordingly, applicant respectfully submits that the application only discusses one segmenting section. As such, the claims are believed to be definite.

In section 5, on page 3 of the Office Action, claims 26 and 39 are rejected under 35 U.S.C. § 112, second paragraph as being incomplete for omitting essential structural cooperative relationships of elements. The Office asserts that the omitted structural cooperative relationships are a relationship between the computer software product and the encoder. Applicant respectfully submits that one of skill in the art would understand based on the disclosure of the present invention how to implement software to carry out the method recited in claim 1, from which claims 26 and 39 ultimately depend. Therefore, applicant respectfully requests withdrawal of the rejection to claims 26 and 39.

#### Claim Rejections Under § 102

In section 6, on page 4 of the Office Action, claims 1, 3-14, 19-21, 26-37, 39-44 and 46-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Gersho et al. (U.S. Patent No. 6,311,154). Applicant respectfully submits that claim 1 is not disclosed or suggested by Gersho, because Gersho at least fails to disclose or suggest segmenting an audio signal into a plurality of segments based on the audio characteristics of the audio signal, and a parametric-type encoding method, as recited in claim 1. Applicant respectfully submits that the limitation regarding parameters in a parametric representation of the audio signal are not disclosed or suggested by Gersho, because Gersho is only concerned with a CELP-type encoding method. For at least this reason, claim 1 is not disclosed or suggested by Gersho.

Furthermore, Gersho also does not disclose or suggest segmenting an audio signal into a plurality of segments based on the audio characteristics of the audio signal. In contrast to claim 1, Gersho discloses that the speech waveform is partitioned into a sequence of successive frames, each frame has a fixed length, and each frame is then partitioned into a number of equal length subframes. See Gersho column 1, lines 55-58; see also column 7, lines 23-26 (each basic frame is partitioned into M equal length subframes). Gersho cannot disclose segmenting based on the audio characteristics as recited in claim 1, because the speech waveform is partitioned into fixed length frames regardless of the audio characteristics. The method for coding a speech signal disclosed by Gersho includes first partitioning samples of a speech signal into frames, and then classifying the speech signal in each of the frames into one of a plurality of classes. See Gersho column 4, lines 25-27. The method discussed in Gersho cannot classify speech samples before partitioning, because the frames that are classified into a class, i.e. the frames must first exist

before they can be classified. Therefore, the characteristics of the speech signal are not determined until after the speech signal has been partitioned into frames.

In contrast to claim 1, Gersho determines where to set the boundary of each frame when partitioning the samples without any regard for the audio characteristics of the speech signal in the frames. Since frames are not classified until after partitioning, and it is impossible to partition the speech signal based on classes before classifying the speech signal, Gersho cannot disclose or suggest segmenting the audio signal into segments based on the audio characteristics of the audio signal, as recited in claim 1. In contrast, claim 1 recites that audio signals are segmented based on the audio characteristics in the audio signals. In claims 1 the segmenting depends on the audio characteristics of the audio signal. Because the audio characteristics of the audio signal may vary from sample to sample, the boundary of the segments is not pre-determined. As a result, a segment can be long or short; it can be 10 frames or 28 frames (see e.g. Figure 3). In Gersho, the length of each partitioned “segment” is the same. See Gersho column 7, lines 23-26.

Furthermore, contrary to the assertions of the Office, partitioning the speech into frames and sub-frames, and enhancing performance by coding the important segments of the excitation more accurately is not the equivalent of segmenting based on audio characteristics, as recited in claim 1. Gersho only discloses that the frames of the speech signal is encoded based on classes, which are based on the nature and amount of information contained in the frames. See Gersho column 3, lines 57-61. In order to enhance the coding efficiency, Gersho discusses coding the excitation signal in windows depending on the classification of the speech frames. Gersho also discloses dividing a fixed frame into a number of subframes for the purpose of locating the active periods (i.e., windows) of the excitation signal in the subframes. However, Gersho does not disclose or suggest segmenting each fixed frame into a plurality of subframes based on the audio characteristics of the audio signal in the fixed frame. Instead, Gersho only discloses coding the excitation in the subframes depending on the audio characteristics of the fixed frame, and then classifying the speech signal in each of the fixed frames into different classes using two classifiers. See Gersho column 4, lines 51-55. Classification is only carried out by a classifier after the speech is partitioned into frames and subframes. After classification, frames belonging to a category are coded by a coding method that represents the excitation in those categories.

Therefore, Gersho does not disclose or suggest segmenting the audio signal into a plurality of segments based on the audio characteristics of the audio signal. For at least this reason, Gersho fails to disclose or suggest all of the limitations recited in claim 1.

Independent claims 19, 27 and 31-32 contain limitations similar to those recited in claim 1. Therefore, for at least the reasons discussed above in relation to claim 1, claims 19, 27 and 31-32 are not disclosed or suggested by Gersho.

The claims depending from the above mentioned independent claims are also not disclosed or suggested by Gersho at least in view of their dependencies.

In section 9, on page 12 of the Office Action, claims 15-18, 22-25, 38 and 45 are rejected under 35 U.S.C. § 102(e) as anticipated by Sinha et al. (U.S. Patent No. 7,191,136). Applicant respectfully submits that claim 22 is not disclosed or suggested by Sinha, because Sinha fails to disclose or suggest segmenting an audio signal into a plurality of segments based on the characteristics of the audio signal, as recited in claim 22.

In contrast to claim 22, Sinha only discloses that the compressed information consists of coded low frequency components as well as parametric representations for the high frequency components from the high pass filter. See Sinha column 4, lines 44-49. However, Sinha does not disclose or suggest that the compressed information has been segmented at all, let alone disclose or suggest that the compressed information has been segmented based on the characteristics of the compressed information. Instead, Sinha only discloses that the compressed information includes parametric representations of the high frequency components, but does not mention that the high frequency components are segmented based on the parameters. For at least this reason claim 22 is not disclosed or suggested by Sinha.

The dependent claims rejected above are also not disclosed or suggested by Sinha at least in view of their dependencies. Since Sinha at least fails to disclose or suggest segmenting audio signals based on the characteristics of the audio signal, which is recited in the independent claims from which the dependent claims rejected above depend..

Conclusion

For at least the reasons discussed above, the present application is believed to be in condition for allowance, and such action is earnestly solicited. The undersigned hereby authorizes the Commissioner to charge Deposit Account No. 23-0442 for any fee deficiency required to submit this response.

Respectfully submitted,

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